REMARKS/ARGUMENTS

Prior to entry of this amendment, claims 1 and 3-13 are currently pending in the subject application. Claim 1 is the sole independent claim. In the drawings, figures 2, 7 and 12 are amended by the instant amendment.

Claims 1 and 3-13 are presented to the Examiner for further prosecution on the merits.

A. Introduction

In the outstanding Office action, the Examiner objected to the drawings, objected to claim 8, rejected claims 1, 3-5, 8-10 and 13 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,300,655 to Ema et al. ("the Ema et al. reference"), rejected claims 6 and 7 under 35 U.S.C. § 103(a) as being unpatentable over the Ema et al. reference in view of U.S. Patent No. 6,362,506 to Miyai ("the Miyai reference"), and rejected claims 11 and 12 under 35 U.S.C. § 103(a) as being unpatentable over the Ema et al. reference.

B. Objection to the Drawings

In the outstanding Office action, the Examiner objected to the drawings, asserting that reference sign 130a points to a line, not an intersection as described in the specification in paragraph 38. *Office Action Made Final of September 30, 2005, at page 2.* By the instant amendment, the drawing figures are amended to revise the reference pointers for the access gates. Thus, in FIG. 2 the reference pointer for 130a is revised, in FIG. 7 the reference pointer for 230a is revised and in FIG. 12 the reference pointer for 330a is revised.

No new matter is added and support for the instant amendment may be found in the specification and figures as originally filed. See, for example, FIG. 2, as originally filed, and FIG. 3, which are reproduced below. Applicants note that, in the original FIG. 2, filed October 10, 2003, the reference sign 130a pointed to an access gate in the right-hand side of the figure. The reference sign 130a was moved in the amended drawing figures that were filed on March 14, 2005, in order to make the reference sign 130a in FIG. 2 point to the same access gate referred to by the reference sign 130a in FIG. 3. However, in the revised FIG. 2 filed on March 14, 2005, the reference sign 130a was inadvertently moved to point at the line, rather than the intersection. Accordingly, by the instant amendment FIG. 2 has been revised to correctly indicate the access gate 130a. Similar revisions have been made to FIGS. 7 and 12.

Additionally, by the instant amendment, FIGS. 2, 7 and 12 have been amended to indicate the field regions 100b, 200b and 300b, respectively. In FIGS. 2 and 7, field regions 100b and 200b were labeled in the original drawings, but these labels were omitted from the revised FIGS. 2 and 7 filed on March 14, 2005. Also, in FIG. 12, the field region was incorrectly labeled as "300" in the original drawing, and the label was omitted from the revised FIG. 12 filed on March 14, 2005. The instant amendments to the drawings correct these informalities. Therefore, applicants respectfully request that the objection to the drawings be reconsidered and withdrawn.

FIG. 2
(as originally filed)

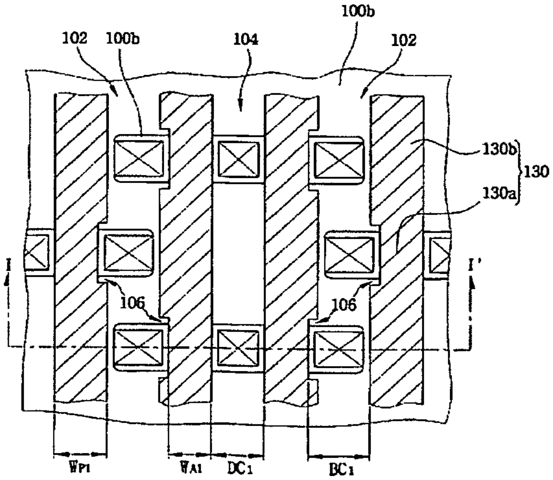
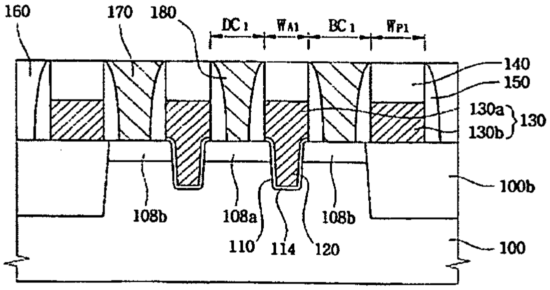


FIG. 3



C. Objection to Claim 8

In the outstanding Office action, the Examiner objected to claim 8, stating that "the phrase 'an interlayer dielectric layer formed over the sidewall spacer formed on the sidewall of one of the plurality of pass gates and field region of the substrate' is confusing." By the instant amendment, the phrase has been replaced with --an interlayer dielectric layer formed over a pass gate sidewall spacer and the field region of the substrate--. Applicants respectfully submit that the instant amendment to claim 8 more particularly recites that the dielectric is formed on the field region. Accordingly, applicants respectfully request that this objection be reconsidered and withdrawn.

D. Asserted Anticipation Rejection

In the outstanding Office action, the Examiner rejected claims 1, 3-5, 8-10 and 13 under 35 U.S.C. § 102(b) as being anticipated by the Ema et al. reference. Applicants respectfully traverse this rejection, and submit that the Ema et al. reference fails to anticipate the rejected claims for at least the reasons set forth below.

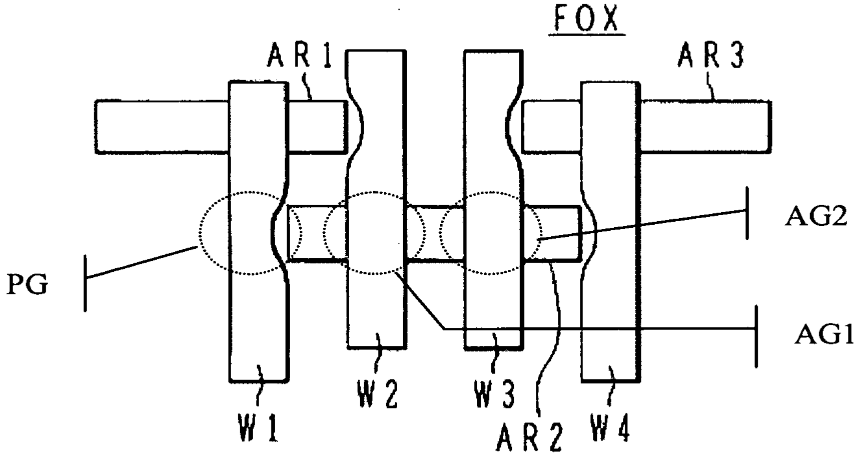
On pages 2-3 of the outstanding Office action, the Examiner rejected claim 1, asserting that the Ema et al. reference discloses:

> first self-aligned contact regions (BC SAC region) formed between adjacent pass gates and access gates (e.g., the region between W1 and W2 or between W3 and W4); and
>
> second self-aligned contact regions (DC SAC region) formed between adjacent access gates (W2 and W3),
>
> wherein a width of each of the first self-aligned contact regions is larger than a width of the second self-aligned contact regions (Ema et al. teach that the pass gates W1 and W4 are formed having notches such that the distance between W1 and W2 is greater than the distance between W2 and W3, see fig. 11), and
>
> wherein the width of the first self-aligned contact region is made larger than that of the second region by the reduced width of the adjacent pass gate (by means of the notch).

The Examiner's rejection of claim 1 is mapped out in greater detail, with reference to an annotated version of FIG. 11 of the Ema et al. reference, below:

> the first self-aligned contact region is on AR2 between W1 and W2, i.e., the region between the circled pass gate PG and the circled active gate AG1;
>
> the second self-aligned contact region is on AR2 between W2 and W3, i.e., the region between the circled active gate AG1 and the circled active gate AG2;
>
> wherein a width of the first self-aligned contact region, i.e., the PG-AG1 width, is larger than a width of the second self-aligned contact region, i.e., larger than the AG1-AG2 width, and
>
> wherein the width of the first self-aligned region PG-AG1 is larger than that of the second region AG1-AG2 *by the reduced width of the adjacent pass gate*, i.e., the notch-reduced width of pass gate PG.

FIG. 11, Ema et al.



However, applicants respectfully submit that claim 1 does not recite "by the reduced width of the adjacent pass gate." Rather, claim 1 recites "by each one of the plurality of access gates having a width smaller than a width of an adjacent pass gate." Applicants respectfully submit that the Ema et al. reference discloses, at most, access gates having a width larger than the width of the adjacent pass gate, whereas claim 1 recites that *the access gates are smaller in width.*

That is, with reference to the annotated FIG. 11 of the Ema et al. reference, the reduced width of the circled pass gate PG means that the width of the adjacent access gate AG1 is larger, not smaller. Accordingly, applicants respectfully submit that the Ema et al. reference fails to disclose or suggest each and every element of claim 1.

For at least the reasons set forth above, applicants respectfully submit that claim 1 is allowable over the cited prior art. The remaining rejected claims, viz., claims 3-13, depend, either directly or indirectly, from claim 1 and are believed to be allowable for at least the reasons set forth above. Accordingly, applicants respectfully request that this rejection be reconsidered and withdrawn.

E. Applicants' Reply to the Examiner's Response to Arguments

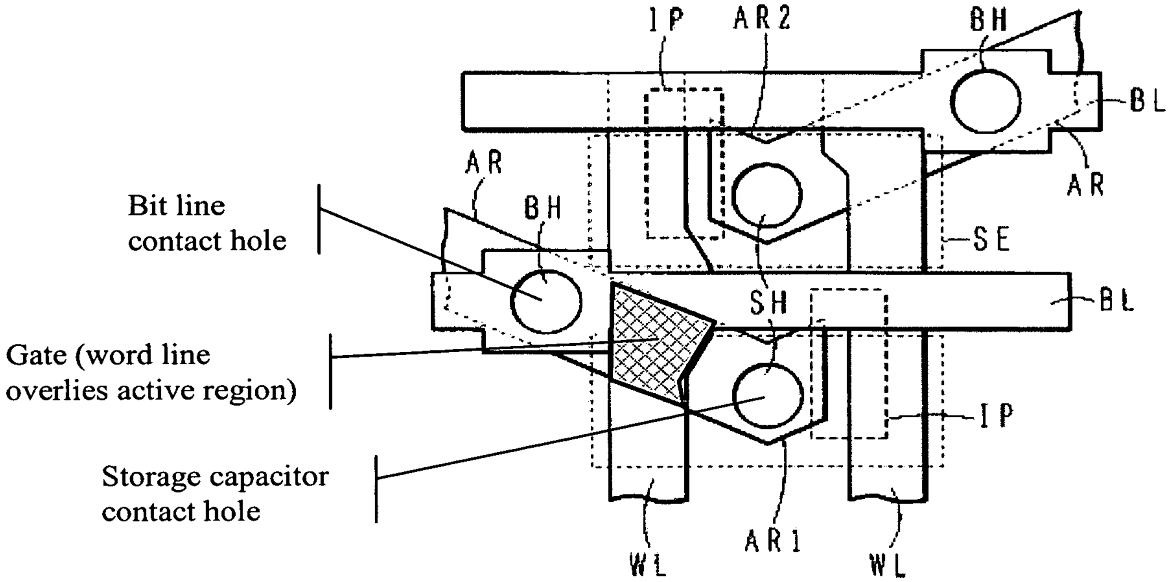
On page 6 of the outstanding Office action, the Examiner set forth an explanation as to why applicants' previously-stated arguments, filed in an amendment dated August 9, 2005, were not persuasive. Applicants respectfully reply with the following remarks.

On page 6, the Examiner stated "[t]he Examiner is unsure if the gates are intersections or lines," and noted that, in FIG. 2 of the subject application, the reference sign 130a points to a line, not an intersection, and the reference sign 130b points to a line and an intersection. Applicants appreciate the confusion arising from the movement of the reference sign 130a in the revised FIG. 2 that was filed on March 14, 2005. As noted above, in the original FIG. 2 the reference sign 130a pointed at an adjacent access gate, but applicants felt that some confusion might arise from the fact that, in the original FIG. 2, 130a indicated a different access gate than was indicated in FIG. 3. Hence, in an effort to make FIG. 2 more closely correspond with FIG. 3, the revised FIG. 2 was filed on March 14, 2005. In the revised FIG. 2, the reference sign 130a was changed to point at the adjacent access gate. However, as the Examiner correctly notes, the reference sign in the revised FIG. 2 was not placed so as to point at the intersection of the gate layer 130 with the active region 100a. Applicants acknowledge this error.

On page 6, the Examiner also stated, with reference to FIG. 11 of the Ema et al. reference, "[a]t the location of AR1 and AR3 the access gates W2 and W3 have a smaller width than adjacent pass gates W1 and W2." Applicants respectfully submit that the Examiner is misinterpreting FIG. 11.

In particular, applicants note that W1, W2, W3 and W4 are not gates. Rather, they are word lines that connect gates and act as gate electrodes only where they pass over source/drain regions. See, e.g., the Ema et al. reference at col. 14, lines 39-51, which states, in part, that a "resist pattern is formed on the gate electrode layer to pattern word lines W1, W2, W3, ..." The word lines act as gate electrodes only in regions where they cross over, or intersect, the source/drain structures that form transistors.

The devices disclosed in the Ema et al. reference may be understood by examining FIG. 7 and lines 29-33 of column 1 of the Ema et al. reference. As stated in lines 29-33, "[a] memory capacitor is connected to one . . . of source/drain regions, and a bit line is connected to the other. . . . A word line is connected to the insulated gate electrode." Thus, activation of the word line makes the channel region, between the source and drain regions, conductive, thereby forming an electrical connection between the bit line and the memory capacitor. This arrangement is illustrated in FIG. 7, as annotated below. Word line WL forms a gate electrode where it intersects the active region AR, as indicated by the crosshatching. In operation, the gate is made conductive by applying a voltage to the word line WL, thus electrically coupling the bit line BL to the storage capacitor via the bit line contact hole BH, the active region including the cross-hatched channel region and the storage capacitor contact hole SH.


Bit line contact hole

Gate (word line overlies active region)

Storage capacitor contact hole

Therefore, with respect to the Examiner's characterization of FIG. 11 of the Ema et al. reference, applicants respectfully submit that word lines W1-W4 are not the same as gates. In particular, access gates are only formed where a word line intersects an active region. Accordingly, applicants respectfully submit that the statement "at the location of AR1 and AR3 the access gates W2 and W3 have a smaller width" does not make sense, because, at the location of AR1 and AR3 the word lines W2 and W3 do not intersect the active regions AR1 and AR3 and, accordingly, there can be no access gates there.

There are only four access gates disclosed in FIG. 11 of the Ema et al. reference: where W1 intersects AR1, where W2 intersects AR2, where W3 intersects AR2, and where W4 intersects AR3. None of those four access gates have a width narrower than the adjacent pass gate. Rather, the adjacent pass gates are made smaller than the access gates by way of notches formed in the pass gates. Accordingly, the Ema et al. reference fails to disclose, or even suggest, each one of the plurality of access gates having a width smaller than a width of an adjacent pass gate, as recited in claim 1.

F. Asserted Obviousness Rejections

In the outstanding Office action, the Examiner rejected claims 6 and 7 under 35 U.S.C. § 103(a) as being unpatentable over the Ema et al. reference in view of the Miyai reference, and rejected claims 11 and 12 under 35 U.S.C. § 103(a) as being unpatentable over the Ema et al. reference. Applicants respectfully submit that the Miyai reference fails to provide the teachings noted above as missing from the Ema et al. reference. Accordingly, neither the Ema et al. reference by itself, nor the proposed combination of the Ema et al. and Miyai references, discloses or suggests each and every element of claim 1. Therefore, as claims 6, 7, 11 and 12 depend from claim 1, they are believed to be allowable for at least the reasons set forth above, and applicants respectfully request that these rejections be reconsidered and withdrawn.

G. Conclusion

Since the cited prior art relied on to reject the claims of the subject application fails to anticipate or render obvious the present invention, applicants respectfully submit that claims 1 and 3-13 are in condition for allowance, and a notice to that effect is respectfully requested.

If the Examiner believes that additional discussions or information might advance the prosecution of the instant application, the Examiner is invited to contact the undersigned at the telephone number listed below to expedite resolution of any outstanding issues.

In view of the foregoing amendments and remarks, reconsideration of this application is earnestly solicited, and an early and favorable further action upon all the claims is hereby requested.

Respectfully submitted,

#35292

November 30, 2005
Date

for Eugene M. Lee, Registration No. 32,039

LEE & MORSE, P.C.
1101 WILSON BOULEVARD, SUITE 2000
ARLINGTON, VA 22209
703.525.0978 TEL
703.525.4265 FAX

PETITION and DEPOSIT ACCOUNT CHARGE AUTHORIZATION

This document and any concurrently filed papers are believed to be timely. Should any extension of the term be required, applicant hereby petitions the Director for such extension and requests that any applicable petition fee be charged to Deposit Account No. 50-1645.

If fee payment is enclosed, this amount is believed to be correct. However, the Director is hereby authorized to charge any deficiency or credit any overpayment to Deposit Account No. 50-1645.

Any additional fee(s) necessary to effect the proper and timely filing of the accompanying-papers may also be charged to Deposit Account No. 50-1645.

OIPE IAP45
NOV 30 2005
PATENT & TRADEMARK OFFICE

BOX AFTER FINAL

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

Ji-Young KIM et al.	Art Unit: 2815
Serial No. 10/682,492	Examiner: George C. Eckert II
Filed: October 10, 2003	*Confirmation No. 1457*
For: RECESS TRANSISTOR (TR) GATE TO OBTAIN LARGE SELF ALIGNED CONTACT (SAC) OPEN MARGIN AND METHOD OF FORMING THE SAME	Attorney Docket No. 259/019

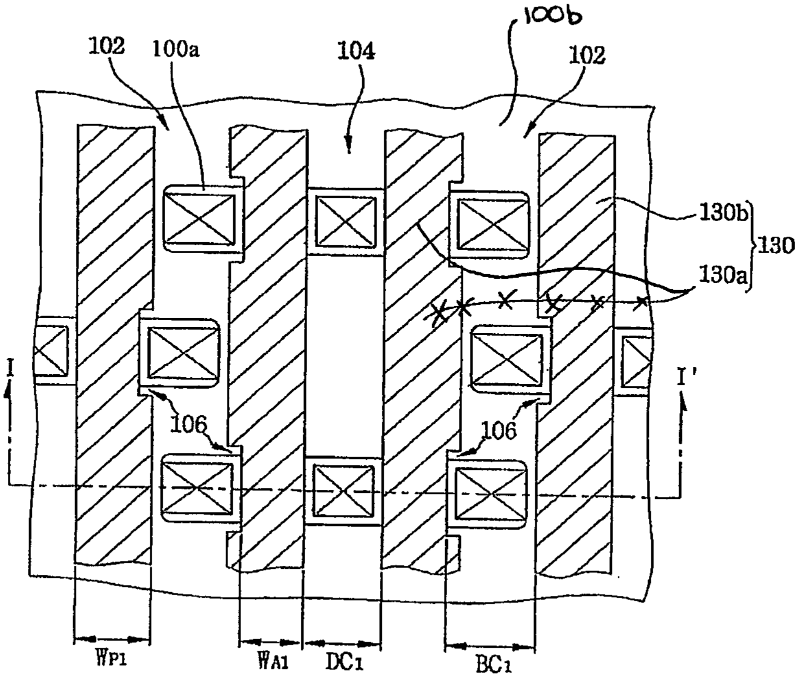
AMENDMENT UNDER 37 C.F.R. § 1.116

APPENDIX A
ANNOTATED DRAWING SHEETS – FIGURES 2, 7, 12

SERIAL NO. 10/682,492, FILED OCTOBER 10, 2003
INVENTORS: JI-YOUNG KIM, ET AL.
ART UNIT 2815 / EXAMINER GEORGE C. ECKERT II
AMENDMENT UNDER 37 C.F.R. §1.116 FILED NOVEMBER 30, 2005
ANNOTATED DRAWING – FIGURE 2

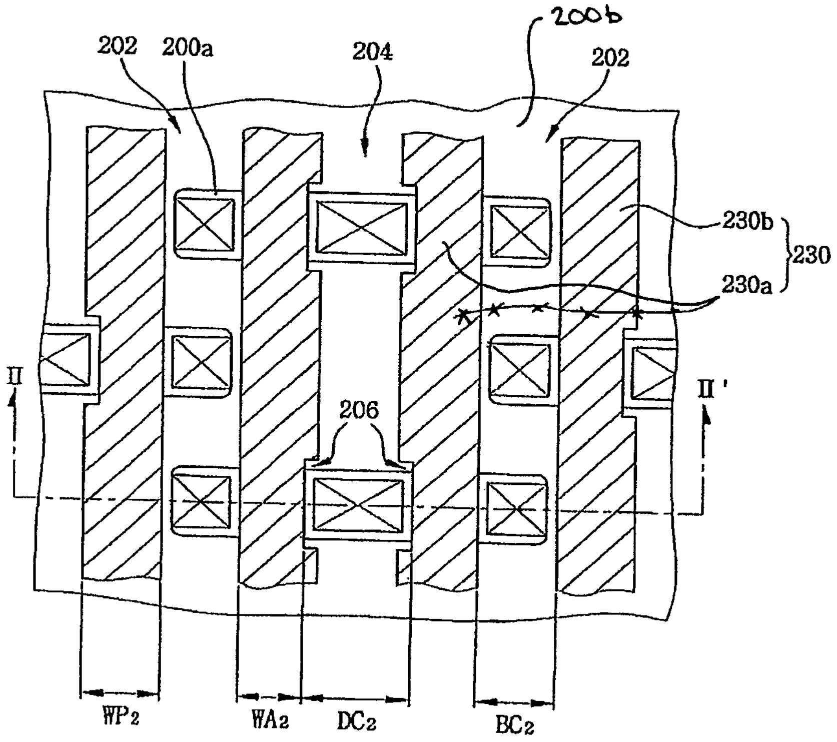
NOV 30 2005
IAP45
PATENT & TRADEMARK OFFICE

FIG. 2



SERIAL NO. 10/682,492, FILED OCTOBER 10, 2003
INVENTORS: JI-YOUNG KIM, ET AL.
ART UNIT 2815 / EXAMINER GEORGE C. ECKERT II
AMENDMENT UNDER 37 C.F.R. §1.116 FILED NOVEMBER 30, 2005
ANNOTATED DRAWING – FIGURE 7

FIG. 7



SERIAL NO. 10/682,492, FILED OCTOBER 10, 2003
INVENTORS: JI-YOUNG KIM, ET AL.
ART UNIT 2815 / EXAMINER GEORGE C. ECKERT II
AMENDMENT UNDER 37 C.F.R. §1.116 FILED NOVEMBER 30, 2005
ANNOTATED DRAWING – FIGURE 12

FIG. 12